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## Amendments to the Claims

This listing of claims will replace all prior listings of claims in the application.

## Listing of Claims

1. (Currently Amended) A steady-state detonation combustor to combust a premixed gas containing a gas fuel and oxygen by generating a detonation wave in steady state with respect to a static system, said steady-state detonation ~~stabilizer~~combustor comprising:

a rich premixed gas combustion chamber to combust a detonative rich premixed gas in which the gas fuel is in a rich state with respect to the oxygen;

a lean premixed gas combustion chamber to combust a detonative lean premixed gas in which the gas fuel is in a lean state with respect to the oxygen;

an interpenetrating nozzle including a plurality of nozzles arranged in an interpenetrating manner, in which a first high-temperature and high-pressure burned gas containing the gas fuel which is unrecated obtained by combusting the rich premixed gas in said rich premixed gas combustion chamber, and a second high-temperature and high-pressure burned gas containing the oxygen which is unreacted obtained by combusting said lean premixed gas in said lean premixed gas combustion chamber, are respectively accelerated to hypersonic speed, such that their static temperatures descend and at the same time they are mixed together; and

a steady-state detonation stabilizer arranged at a position which bars a flow of a premixed gas containing the unreacted gas fuel and the unreacted oxygen obtained by mixing the first high-temperature and high-pressure burned gas and the second high-temperature and high-pressure burned gas through said interpenetrating nozzle, in which the premixed gas is combusted by generating, through impingement of the

premixed gas flowing at hypersonic speed through the interpenetrating nozzle, the detonation wave which is stabilized.

2. (Original) The steady-state detonation combustor according to claim 1, further comprising a simultaneous ignition apparatus to inject a high-temperature combustion gas jet simultaneously to said rich premixed gas combustion chamber and said lean premixed gas combustion chamber,

wherein said simultaneous ignition apparatus includes a simultaneous ignition chamber to encapsulate a detonative equivalent premixed gas which contains the gas fuel and the oxygen mixed at an equivalence ratio of 1.0, an igniter to ignite the equivalent premixed gas encapsulated in said simultaneous ignition chamber, and an injection controller respectively provided between the simultaneous ignition chamber and said rich premixed gas combustion chamber, and between the simultaneous ignition chamber and said lean premixed gas combustion chamber,

wherein the injection controller is structured such that a high-temperature and high-pressure gas obtained by combusting the equivalent premixed gas in the simultaneous ignition chamber is simultaneously injected into said rich premixed gas combustion chamber and said lean premixed gas combustion chamber as a high-temperature combustion gas jet, so that the rich premixed gas and the lean premixed gas in each combustion chamber can be ignited simultaneously.

3. (Original) The steady-state detonation combustor according to claim 2, wherein the injection controller is an openable and closable valve, and ignition by the igniter is performed by discharge.

4. (Original) The steady-state detonation combustor according to claim 1, wherein the rich premixed gas and the lean premixed gas are any one type of mixed gases among a

mixed gas of hydrogen and oxygen, a mixed gas of hydrocarbon of methane series including methane, ethane, propane, butane, pentane, and hexane and oxygen, a mixed gas of hydrocarbon of ethylene series including ethylene and propylene and oxygen, a mixed gas of acetylene and oxygen, or a mixed gas of ammonia and oxygen.

5. (Original) The steady-state detonation combustor according to claim 1, wherein an equivalence ratio of the gas fuel with respect to the oxygen in the rich premixed gas is 1.2 - 2.0, and an equivalence ratio of the gas fuel with respect to the oxygen in said lean premixed gas is 0.3 - 0.8.

6. (Original) The steady-state detonation combustor according to claim 1, wherein a ratio of a volume capacity of said lean premixed gas combustion chamber with respect to a volume capacity of said rich premixed gas combustion chamber is 0.5 - 2.0.

7. (Original) The steady-state detonation combustor according to claim 2, wherein a ratio of a volume capacity of the simultaneous ignition chamber with respect to a total volume capacity of said rich premixed gas combustion chamber and said lean premixed gas combustion chamber is 1/5 - 1/30.

8. (Original) The steady-state detonation combustor according to claim 1, wherein a ratio of a cross sectional area of an interpenetration starting point with respect to a cross sectional area of a throat portion of said interpenetrating nozzle is 10 or greater, a ratio of a cross sectional area of an outlet portion with respect to the cross sectional area of the throat portion is 25 or greater; and the cross sectional area of the interpenetration starting point is smaller than the cross sectional area of the outlet portion.

9. (Original) The steady-state detonation combustor according to claim 8, wherein said interpenetrating nozzle includes two identically shaped cone nozzles, with each outlet portion and each throat portion of the cone nozzles being arranged respectively on a same plane, and axes of the cone nozzles being arranged in parallel, such that each of the cone nozzles is interpenetrating, with the interpenetrating portion being cut out.

10. (Original) The steady-state detonation combustor according to claim 8, wherein said interpenetrating nozzle includes two identically shaped, isosceles-triangle plate nozzles, with each outlet portion and each throat portion of the plate nozzles being arranged respectively on a same plane and center lines of each plate nozzle being arranged in parallel, thus allowing the plate nozzles to interpenetrate each other, with the interpenetrating portion being cut out.

11. (Original) The steady-state detonation combustor according to claim 1, wherein, in said steady-state detonation stabilizer, a tip portion receiving a flow of a premixed gas passing through said interpenetrating nozzle is hemispheric, and a supporting portion supporting the hemispheric tip portion is cylindrical.

12. (Original) The steady-state detonation combustor according to claim 1, wherein, in said steady-state detonation stabilizer, a tip portion receiving a flow of a premixed gas passing through said interpenetrating nozzle is conical and a supporting portion supporting the conical tip portion is cylindrical.

13. (Original) The steady-state detonation combustor according to claim 1, wherein, in said steady-state detonation stabilizer, a tip portion receiving a flow of a premixed gas passing through said interpenetrating nozzle is polygonal cone

shaped, and a supporting portion supporting the polygonal cone shaped tip portion is polygonal column shaped.

14. (Original) The steady-state detonation combustor according to claim 1, wherein said steady-state detonation stabilizer includes two two-dimensional wedges arranged oppositely to each other, with each peak portion of the two-dimensional wedges being arranged on a same plane which is orthogonal to a flow direction of the premixed gas passing through said interpenetrating nozzle.

15. (Original) The steady-state detonation combustor according to claim 1, wherein said steady-state detonation stabilizer includes two conical, convergent to divergent shaped nozzles arranged such that convergent portions thereof are coupled on each other, with each axis of the convergent to divergent shaped nozzles coinciding, and each axis being arranged in a direction along a flow direction of the premixed gas passing through said interpenetrating nozzle.

16. (Original) A steady-state detonation wave generating method in which a detonative detonation wave is generated in steady state with respect to a static system, said method comprising the steps of:

infusing a detonative rich premixed gas whose gas fuel is rich with respect to oxygen to a rich premixed gas combustion chamber, while at the same time infusing a detonative lean premixed gas whose gas fuel being lean with respect to the oxygen to an lean premixed gas combustion chamber;

combusting, by simultaneously igniting the rich premixed gas and the lean premixed gas, the rich premixed gas in the rich premixed gas combustion chamber to generate a first high-temperature and high-pressure burned gas containing the gas fuel which is unreacted, while at the same time combusting the lean premixed gas in the lean premixed gas combustion chamber

to generate a second high-temperature and high-pressure burned gas containing the oxygen which is unreacted;

accelerating, by using an interpenetrating nozzle which includes a plurality of nozzles arranged in an interpenetrating manner, the first and second high-temperature and high-pressure burned gases respectively to hypersonic speed such that their static temperatures descend and they are mixed together; and

barring a premixed gas flow obtained by mixing the first and the second high-temperature and high-pressure burned gases by a steady-state detonation stabilizer, such that a stabilized detonation wave is generated.

17. (New) A steady-state detonation combustor to combust a premixed gas containing a gas fuel and oxygen by generating a detonation wave in steady state with respect to a static system, comprising:

a rich premixed gas combustion chamber to combust a detonative rich premixed gas in which said gas fuel is in a rich state with respect to said oxygen;

a lean premixed gas combustor to combust a detonative lean premixed gas in which said gas fuel is in a lean state with respect to said oxygen; and

interpenetrating nozzles including a plurality of nozzles arranged in an interpenetrating manner, in which a first high-temperature and high-pressure burned gas containing said unreacted gas fuel obtained by combusting said rich premixed gas in said rich premixed gas combustion chamber, and a second high-temperature and high-pressure burned gas containing said unreacted oxygen obtained by combusting said lean premixed gas in said lean premixed gas combustion chamber, are respectively accelerated to hypersonic speed, such that their static temperatures descend and at the same time they are mixed together.